Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (Original) A method for determining illumination of surface points of an object in a scene from lighting sources comprises:

determining a first thickness map for a first lighting source for the scene, wherein the first thickness map includes a first plurality of thickness values of the object with respect to distance from the first lighting source;

determining a surface point on the object;

determining a first plurality of thickness values associated with the surface point on the object in response to the first thickness map;

determining a first filtered thickness value associated with the surface point on the object in response to the first plurality of thickness values; and

determining an illumination contribution from the first lighting source at the surface point in response to the first filtered thickness value.

2. (Original) The method of claim 1 wherein determining the illumination contribution further comprises calculating the illumination contribution in response to the first filtered thickness value and a thickness value relationship for the object selected from the group: thickness value versus absorption relationship, thickness value versus transmission relationship.

3. (Original) The method of claim 2 wherein the first plurality of thickness values of the object with respect to the first lighting source vary in direction away from the first lighting source.

4. (Original) The method of claim 3 wherein determining the first plurality of thickness values comprises determining a first plurality of thickness values of the object between the first lighting source and the plurality of surface points in the respective directions.

5. (Original) The method of claims 2 further comprising:

determining a second thickness map for a second lighting source for the scene, wherein the second thickness map includes a second plurality of thickness values of the object with respect to the second lighting source;

determining a second plurality of thickness values associated with the plurality of surface points on the object in response to the second thickness map;

determining a second filtered thickness value associated with the surface point on the object in response to the second plurality of thickness values; and

determining an illumination contribution from the second lighting source at the surface point in response to the second filtered thickness value.

6. (Original) The method of claim 5 further comprising determining a shading value for the surface point on the object in response to an illumination contribution selected from the group: the illumination contribution from the first lighting source, the illumination contribution from the second lighting source, the illumination contribution from the first lighting source and the illumination contribution from the second lighting source.

7. (Original) The method of claims 5 further comprising:

determining a shading value for the surface point on the object in response to the illumination contribution from the first lighting source;

determining a value for a pixel in an image in response to the shading value; and

storing a representation of the image in a tangible media.

8. (Original) The method of claim 7 further comprising outputting the representation of the image from the tangible media to one or more viewers.

9. (Canceled).

10. (Currently amended) A computer system comprises:

a memory configured to store a first thickness map associated with a first illumination source within a scene, wherein the first thickness map includes a first plurality of

thickness functions of ~~at an~~ at least one object versus distance away from the first illumination source; and

a processor coupled to the memory, wherein the processor is configured to

retrieve the first thickness map from the memory,

~~wherein the processor is configured to~~ determine a surface point on the at least one object,

~~wherein the processor is configured to~~ determine a neighborhood of surface points on the at least one object in response to the surface point on the at least one object,

~~wherein the processor is configured to~~ determine a plurality of thickness values of the at least one object in response to the surface point and the neighborhood of surface points and in response to the first thickness map,

~~wherein the processor is configured to~~ determine a filtered thickness value of the at least one object in response to the plurality of thickness values, and

~~wherein the processor is configured to~~ determine an illumination contribution from the first illumination source at the surface point in response to the filtered thickness value of the at least one object.

11. (Original) The computer system of claim 10

wherein the memory is also configured to store a relationship between thickness values of the one object versus a characteristic selected from the group: illumination attenuation, illumination transmission, and

wherein the processor is configured to determine the illumination contribution in response to the filtered thickness value and in response to the relationship.

12. (Currently amended) ~~The computer system of claim 11~~ A computer system comprises:

a memory configured to store:

a first thickness map associated with a first illumination source within a scene, wherein the first thickness map includes a first plurality of thickness functions of at least one object versus distance away from the first illumination source,

~~wherein the relationship comprises~~ a first relationship between thickness values of the at least one object versus a characteristic selected from the group: ~~and~~ illumination attenuation in a first color component, illumination transmission in the first color component, and

a second relationship between thickness values of the at least one object ~~and~~ versus a characteristic selected from the group: illumination attenuation in a second color ~~component~~ component, illumination attenuation in the second color component; and

a processor coupled to the memory, wherein the processor is configured to

retrieve the first thickness map from the memory,

determine a surface point on the at least one object,

determine a neighborhood of surface points on the at least one object in response to the surface point on the at least one object,

determine a plurality of thickness values of the at least one object in response to the surface point and the neighborhood of surface points and in response to the first thickness map,

determine a filtered thickness value of the at least one object in response to the plurality of thickness values,

determine an illumination contribution from the first illumination source at the surface point in response to the filtered thickness value of the at least one object and in response to the first and second relationships.

13. (Currently amended) The computer system of claim 12 wherein the first color component and the second color component are selected, without replacement from the same one of the color component groups consisting: {red, green, blue}, {cyan, magenta, yellow}.

14. (Original) The computer system of claim 12 wherein the first relationship and the second relationship are different.

15. (Original) The computer system of claim 14 wherein each of the first plurality of thickness functions of the object versus distance away from the first illumination source comprise a table of thickness values of the object versus distance from the first illumination source.

16. (Original) The computer system of claim 10 wherein the processor is also configured to determine a shading value for the surface point in response to the illumination contribution for the first illumination source at the surface point.

17. (Original) A computer program product for a computer system including a processor includes:

code that directs the processor to retrieving a first thickness map for a first illumination source for the scene, wherein the first thickness map includes an array of thickness functions, wherein each thickness functions comprises a relationship between thickness values of the object with respect to distance from the first illumination source;

code that directs the processor to determine a surface point on the object;

code that directs the processor to determine a first plurality of thickness functions associated with the surface point on the object in response to the first thickness map;

code that directs the processor to determine a first plurality of thickness values in response to the first plurality of thickness functions and in response to the surface point on the object;

code that directs the processor to determine a first filtered thickness value associated with the surface point on the object in response to the first plurality of thickness values; and

code that directs the processor to determine an illumination contribution from the first illumination source at the surface point in response to the first filtered thickness value;

wherein the codes reside on a tangible media.

18. (Original) The computer program product of claim 17 wherein code that directs the processor to determine an illumination contribution comprises code that directs the processor to determine the illumination contribution from the first illumination source at the surface point in response to the first filtered thickness value and a relationship for the object selected from the group: absorption versus thickness value, transmission versus thickness value.

19. (Original) The computer program product of claim 18 wherein the first plurality of thickness values comprise amounts of material of the object between the first illumination source and the surface point on the object and surface points in a neighborhood of the surface point on the object.

20. (Original) The computer program product of claim 18

wherein the relationship for the object comprises an absorption amount of a primary component of light versus thickness value; and

wherein the primary component of light is selected from the group: red, green, blue.

21. (Original) The computer program product of claim 19 further comprising code that directs the processor to determine the first thickness map for the first illumination source for the scene.

22. (Original) The computer program product of claim 20 further comprising:

code that directs the processor to determine a shading value at the surface point in response to the illumination contribution from the first illumination source;

code that directs the processor to determine a pixel value in response to the shading value; and

code that directs the processor to store a representation of a frame of animation including the pixel value in a tangible media.

23. (New) A method for determining illumination of surface points of an object in a scene from lighting sources comprises:

determining a first thickness map for a first lighting source for the scene, wherein the first thickness map includes a first plurality of thickness values of the object with respect to distance from the first lighting source;

determining a surface point on the object;

determining a first plurality of thickness values associated with the surface point on the object in response to the first thickness map;

determining a first filtered thickness value associated with the surface point on the object in response to the first plurality of thickness values; and

determining an illumination contribution from the first lighting source at the surface point in response to the first filtered thickness value and further in response to a relationship characterizing the passage of at least first and second color components of light from the first lighting source through the object.

24. (New) The method of claim 23 wherein the relationship for the object is selected from the group: thickness value versus absorption relationship for the first and second color components, thickness value versus transmission relationship for the first and second color components.

25. (New) A computer program product for a computer system including a processor includes:

code that directs the processor to retrieving a first thickness map for a first illumination source for the scene, wherein the first thickness map includes an array of thickness functions, wherein each thickness functions comprises a relationship between thickness values of the object with respect to distance from the first illumination source;

code that directs the processor to determine a surface point on the object;

code that directs the processor to determine a first plurality of thickness functions associated with the surface point on the object in response to the first thickness map;

code that directs the processor to determine a first plurality of thickness values in response to the first plurality of thickness functions and in response to the surface point on the object;

code that directs the processor to determine a first filtered thickness value associated with the surface point on the object in response to the first plurality of thickness values; and

code that directs the processor to determine an illumination contribution from the first illumination source at the surface point in response to the first filtered thickness value and further in response to a relationship characterizing the passage of at least first and second color components of light from the first lighting source through the object;

wherein the codes reside on a tangible media.

26. (New) A computer-readable tangible medium storing a representation of an image generated by a computer system performing the following method for determining illumination of surface points of an object in a scene from lighting sources:

determining a first thickness map for a first lighting source for the scene, wherein the first thickness map includes a first plurality of thickness values of the object with respect to distance from the first lighting source;

determining a surface point on the object;

determining a first plurality of thickness values associated with the surface point on the object in response to the first thickness map, wherein the first plurality of thickness values of the object with respect to the first lighting source vary in direction away from the first lighting source;

determining a first filtered thickness value associated with the surface point on the object in response to the first plurality of thickness values; and

determining an illumination contribution from the first lighting source at the surface point in response to the first filtered thickness value and further in response to a thickness value relationship for the object selected from the group: thickness value versus absorption relationship, thickness value versus transmission relationship.